The depth of the stones at Colchester Castle vary from six to eight and a half inches; those of St. Botolph's Priory, from five to eight inches. J. Adey Repton.

THE USE OF LEAD PIPES AND CISTERNS.

As it has unavoidably happened, notwithstanding our desire not to be mistaken for alarmists, that the drift of the recent observations in our Journal on the use of lead has turned much more on the necessity of caution, than on the means of safety and freedom, in the employment of so convenient and variously useful an article as lead undoubtedly is, we shall now proceed to collate from standard authorities some of the most recent conclusions and advices on the mutual adaptability of lead and water to a more or less safe and innocent association and intercourse with each other; so that some of the evil fruits of ignorance on this head may be clearly seen and cautiously avoided by some of those whose business and duty it is to bring about such an association to the best of their ability and experience.

Perhaps one of the most remarkable of those conclusions to which recent chemical authorities have come is this, that the purest of all water, even were it distilled, is the most likely to act on lead, and thus become contaminated with poisonous matter. In one sense indeed this conclusion is not new, or rather some of the facts on which it has been based are of old enough date. At Tunbridge for instance in 1514, a plumber, who undertook to supply the town with water, forthwith accordingly laid a line of leaden pipes for a quarter of a mile,—redeemed his contract sure enough,—but nearly poisoned a number of the people, many of whom were seized with lead colic, while one great water-drinker in particular, a lady, lost the use of her limbs for months, until a natural alarm arising, iron pipes were substituted, and the evil ceased. Mr. Brande, the chemist, found lead in the water which had passed through the pipes, but none at the fountain head; and Dr. Thomson examined the latter, and found it *exceedingly pure*. In some cases such results were attributed to the solvent powers of carbonic acid gas, (and, indeed, it has been laid down as an axiom, that pure water, *per se*, has no action on lead,) but Christison, who adduces a number of proofs of the "danger of conveying very pure water in long lead pipes," finds reason to doubt even this. If we might presume to express an opinion on such a point in the same breath with such chemists as Christison, and Paris, and Graham, we might humbly suggest that both opinions may be in a certain sense correct. It has been proved that the purest of all water—even, if we mistake not, water newly formed from its elements, far less merely distilled water,—contains ammonia,—that, in fact, there is a tendency to the generation of ammonia in even absolutely pure water, and we remember some time since that we had occasion to note the fact in The Builder, that it was known even amongst the ancient chemists that ammonia exists in the purest of all water. Now ammonia is known to be capable in solution of oxidizing some metals and uniting with the oxides as a base with an acid. There may even be high and fragile oxides, beyond the highest usually recognized, amongst the metals, and ammonia may select such oxides as its acid. Thus it may be that though absolutely pure water would have no action on lead *per se*, the purest attainable, or at least naturally existent, water may be capable of acting on lead in circumstances where there may be no evidence or probability of the action of carbonic acid. But it is not to give our own opinions that we are at present pen in hand. We may therefore only here observe, that while there is now no doubt at all events that the purest water will act the most obviously on lead, if it have access to the air; it has been found—and Christison in particular, has recently instituted an investigation into this branch of the subject, the result of which is—"that neutral salts in various and for the most part minute proportions retard or prevent the corrosive action of water on lead, allowing the carbonate to deposit itself slowly, and to adhere with such firmness to the lead as not to be afterwards removed by moderate agitation, adding subsequently to this crust other insoluble salts of lead the acids of which are derived from the neutral salts in solution," and thus at length forming a permanent impermeable screen through which the action of water cannot any longer be carried on." In short, he adds, "the preservation of the lead from corrosion, and of the water from impregnation with lead, is thus complete." It may therefore be a question, whether it is prudent to 'cleanse' away *such* a crust where circumstances may have been favourable to its formation, and even whether it be not desirable rather to form it artificially, when circumstances are not favourable, by the introduction of a neutral salt, such as sulphate of magnesia or of lime, into the water of the cistern, of course without rinzing or any other disturbance likely to prevent the slow consolidation of the preservative crust.

While speaking of cisterns and their preservation, we may here observe, that in Edinburgh, after it had been forced on the notice of plumbers by frequent experience that the leaden lids of cisterns were extremely liable to interior corrosion, and indeed to total destruction, while the cistern itself remained in good condition, the practice was gradually introduced of making the lids of leaden cisterns of wood. This fact affords a remarkable instance of the power of distilled water in even a close cistern to corrode lead, while no such power was possessed by the same water undistilled, or comparatively impure, and even containing carbonic acid if any really did also exist in the water distilled from it.

It has been found that the presence of vegetable or animal matters may either decompose the salts of lead, or materially alter the action of the preceding re-agents, and, as it may be, render the poison soluble—a fact which 'Vox' by the bye, overlooked—so that the utmost care should be taken that leaden cisterns be kept clear of such substances, whether deposited by the water, or casually introduced, in the shape of stray leaves, dead vermin, &c. A cistern crust, for instance, will dissolve with brisk effervescence in the product of the acetous fermentation of vegetable matter, and at once form sugar of lead.

In summing up the results of an elaborate series of inquiries on the subject of leaden pipes and cisterns, and their effects on water and on salts in solution, Christison, in his treatise on Medical Jurisprudence, suggests "that rain or snow water for culinary use should not be collected from leaden roofs nor preserved nor conveyed in lead; that the same rule applies to spring waters of unusual purity, where, for example, the saline impregnation does not exceed a 15,000th part of the water; that spring water, which contains a 10,000th or 12,000th part of salts, may be safely conveyed in lead pipes if the salts in the water be chiefly carbonates and sulphates; that lead pipes cannot be safely used even where the water contains a 4,000th part of saline matter if this consist chiefly of muriates; that spring water, even though it contains a large proportion of salts, should not be kept for a long period in contact with lead; and that cisterns should not be covered with lids of this metal."

White Lead.—Two new modes of making white lead without injury to workmen are described in the *Mining Journal*. One is that of M. Gannal, of France, who rotates granulated lead in an octagonal revolving cylinder with water till reduced to impalpable powder, when it is exposed to the air and oxidates, after which carbonic acid is introduced through a flexible tube, and converts the oxide into carbonate, or white lead, of dazzling whiteness, after two days' washing. The mass is lastly pressed on filtres, divided into pieces, and dried in stoves—into cakes, we presume; so that thus also the equally serious evils experienced in the mere turning of the dry dust or powder over, into or out of the barrels, &c., after it is made, may be obviated. The other mode of making it is that of Mr. R. C. Lutham, chemist, Craven-street, Strand, who submits lead to the action of the acid vapours evolved in the brewing process in air-tight chambers, heated by furnace until it is converted into carbonate; the workmen being thus protected from the fumes evolved during the process.

"'a part' which contains," as he elsewhere says, "the acid *of a part* of the neutral salt dissolved in the water," which is precisely what we suggested as the probability in the case where larger quantities of the neutral salt—sulphate of magnesia—were rinsed in solution through a cistern for the purpose of removing the crust on which of course it was not in that case allowed to act slowly and quietly, so as to produce the contrary effect of consolidation.

FOUNTAINS.

Mr. Editor.—In your view of Buckingham-palace is figured in front "*a Fountain*," the taste of which, to my poor judgment, shews as little of intelligence in ornamental hydraulics in Mr. Blore, as the two Trafalgar-square fountains do in the taste for such things in Mr. Barry. The subject requires study in its own branch in order to render it effective.

A fountain in front of the British Sovereign's palace should be splendid, yielding in nothing to the fountains we see in other parts of Europe. And when a fountain is handsome, it forms a beautiful object for the eye of taste to contemplate, besides enlivening every place in which it finds position. But the genius of *sculpture* must be superadded to the mechanism of the stone-mason, or it will fail to be properly effective in a prominent situation. A modest *patera and jet* will do well enough in the area of a shrubbery walk, but groups of statuary are necessary in front of a palace or structure of magnitude. Besides which, the edge of the basin in which a fine fountain is, should have *a coping* of a bold handsome section, and if from this basin the water was suffered to fall cascade fashion into the lake below, the geometric and the natural would be well and clearly defined. Mr. Blore has placed some little unmeaning-looking vases, quasi *pots*, at the intersecting angles of the walks. Surely a good opportunity is here rather given for vases of classic taste, instead of such little stone deformities, that look something like Staffordshire ware *mustard pots*. The vases of *Benvenuto Cellini* indicate entirely my meaning, the taste being only transferred from metal to stone.

Not having seen any thing of the projected improvements beyond what your Builder print gives, I must be pardoned if I am too caustic in my criticism as an amateur, and remain, Mr. Editor, your constant reader and lover of true taste in all its branches,

W. Mason.

Necton-hall, Sept. 21, 1847.

NOTES IN THE PROVINCES.

Prince Albert is expected shortly to favour Portsmouth with his presence; to lay the foundation-stone of the new hospital there. ——We regret to perceive that the national example set by the metropolitan carpenters and joiners has not yet penetrated far into the provinces, if we may judge by the recent strike of masons at the Keyham new steam-yard, near Devonport, gone into in order to compel Messrs. Baker and Son to discharge two poor fellows who cannot be forced into 'union' with the strikers. Messrs. Baker are backed by the Admiralty, who have permitted the works to be suspended, and assured them of 'protection to workmen generally in the free exercise of their judgment against dictation and tyranny.' Experience will probably teach even the Devonport masons that the right and only way to true *union* is persuasion, not compulsion.——The new custom-house at Southampton was to be opened to the public on Monday last. A portion of the old building at the quay is also to be retained for the sake of convenience.——The Newport paving and lighting commissioners, according to the Hampshire papers, are in a state of hopeless insolvency, 700*l.* in debt, and unable even to pay up arrears on their gas account; so that the gas company have actually been obliged to cut off the supplies, and plunge the town into primitive darkness. The rate-payers declare the levy of rates illegal till they 'have a voice in the choice of the men who dispense them.'——About 500 'navigators' are to be forthwith set to work on the construction of the Weymouth breakwater at 3*s.* 6*d.* a day; the quarriers want 5*s.* The contractors are said to be under a penalty of 40,000*l.*, to have the railroad completed by March next.——A new town of Portland, says the *Poole Herald*, is to be constructed on the table land between Portland Harbour and the common head land. ——The bishops are at work in giving the finishing touch of consecration to new churches recently built in various quarters—Christ Church, Portswood, for example, Sutton Waldron parish church, near Shaftesbury, Woodhall Church, near Iodioe Spa, St. Phillip's

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